

Activity 3

What Drives The Plates?

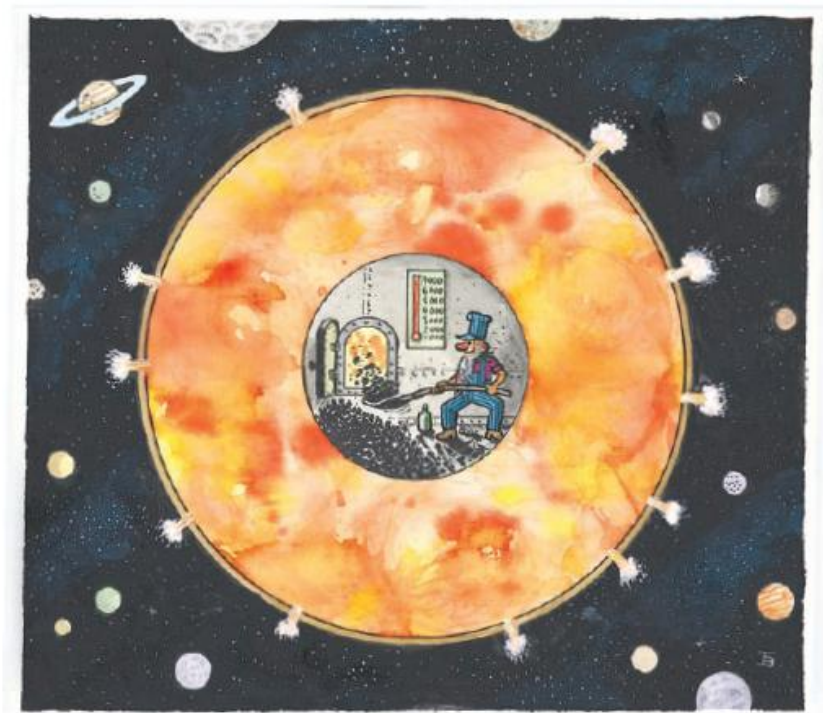
Think About It

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- What causes the movement of the Earth's plates?



WHAT DO YOU THINK?

Activity 3 What Drives The Plates?

Digging Deeper

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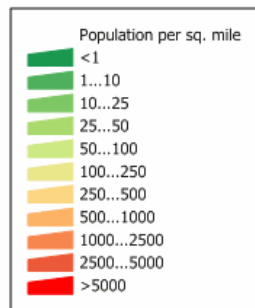
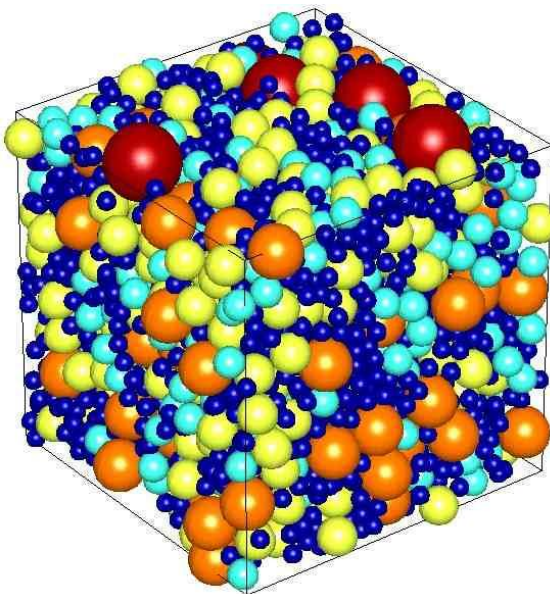
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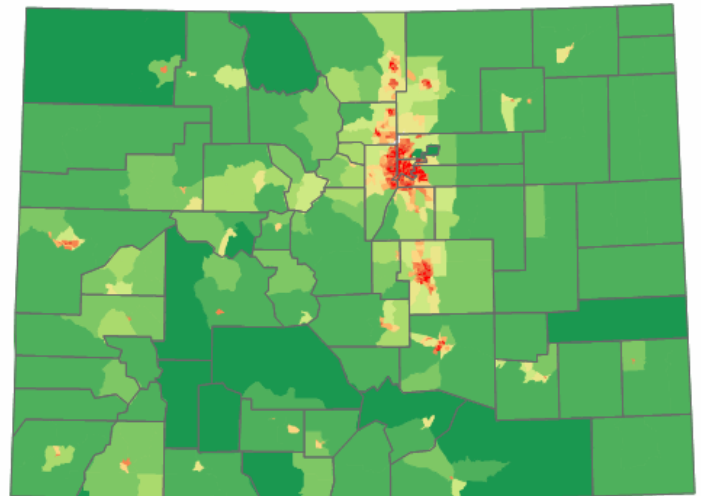
Density

how much matter there is in some amount of space

It describes the relationship between an object's mass and its volume



Source: U. S. Census Bureau
Census 2000 Summary File 1
population by census tract.



Example

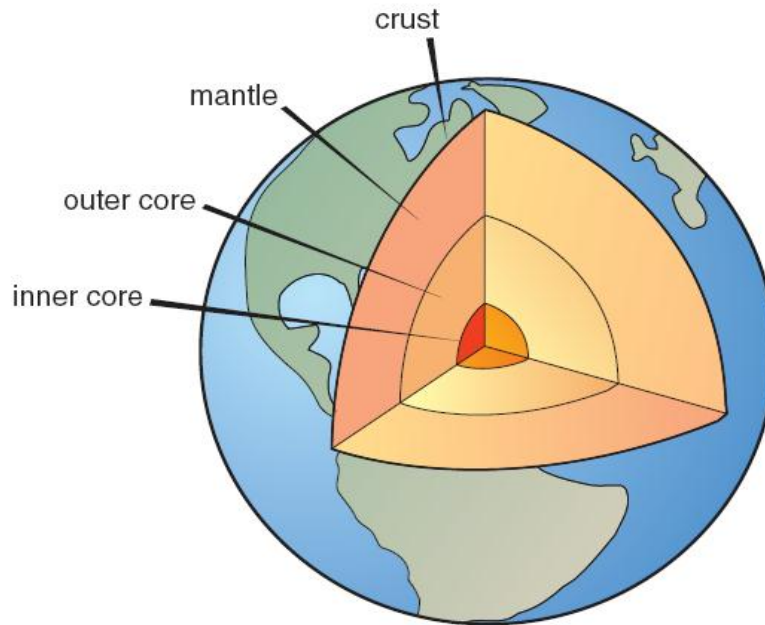
Less dense materials rise upward and float on more dense material

rocks in the Earth's crust are less dense than the rocks of the mantle below

The crust "floats" on the more dense mantle material

Earth's layers

- inner core
- outer core
- mantle
- crust



Core

the solid, innermost part of the Earth made of iron and nickel

Outer core

is molten iron and nickel, and located above the inner core

Inner core

is solid iron and nickel because it is under tremendous pressure, and is located below the outer core

It is the inner most layer of the Earth

Mantle layer of Earth below the crust

Crust the outermost layer of Earth; is also the thinnest layer

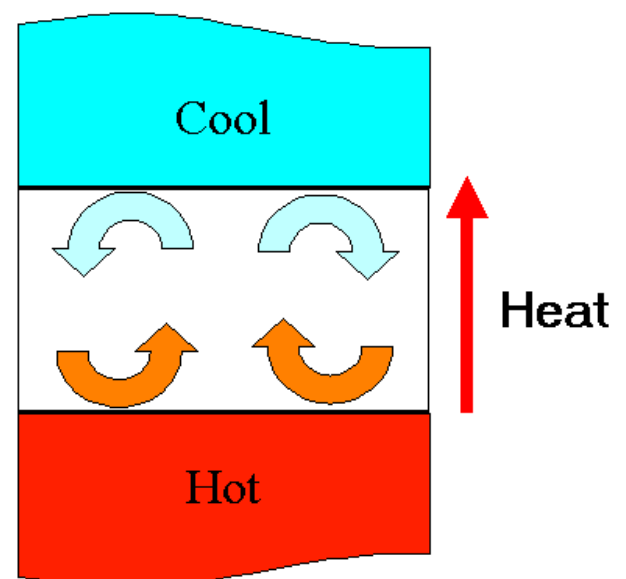
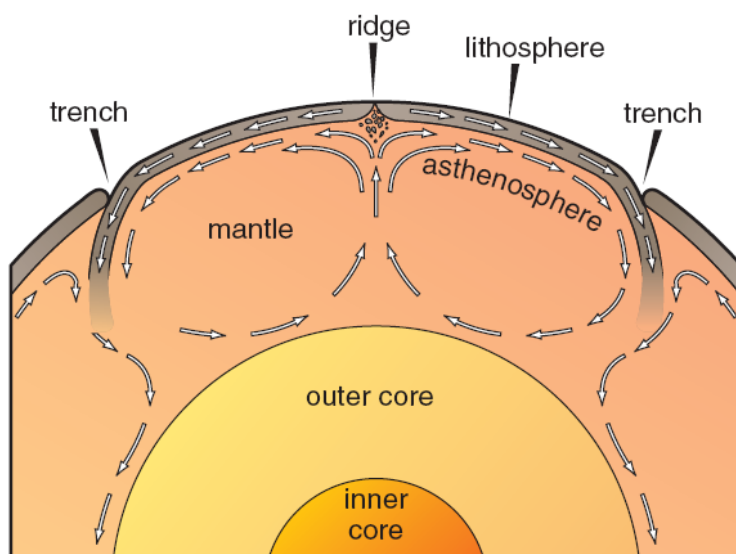
Temperature of the Earth increases with depth

The transfer of heat from inside the Earth to the surface causes the movements of Earth's crust and mantle

Thermal convection

the cycle of magma heating and rising, then cooling and sinking in the Earth's mantle

Scientists believe this process causes the movement of the plates



Mantle
convection

the material is heated at the core/
mantle boundary, where it rises
upward, spreads out horizontally,
cools, and sinks back into the
interior

<http://www.absorblearning.com/media/attachment.action?quick=12p&att=2775>

<http://education.sdsc.edu/optiputer/flash/convection.htm>

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Check Your Understanding

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1. How can the density of the Earth be calculated?

2. How does the density of the Earth provide evidence that the interior of the Earth is denser than the surface?

3. Name three main layers of the Earth.

4. Why is the inner core of the Earth solid, even though it is hot?

5. How are convection currents set up?

6. What part of the Earth's interior layers are in motion due to density differences?

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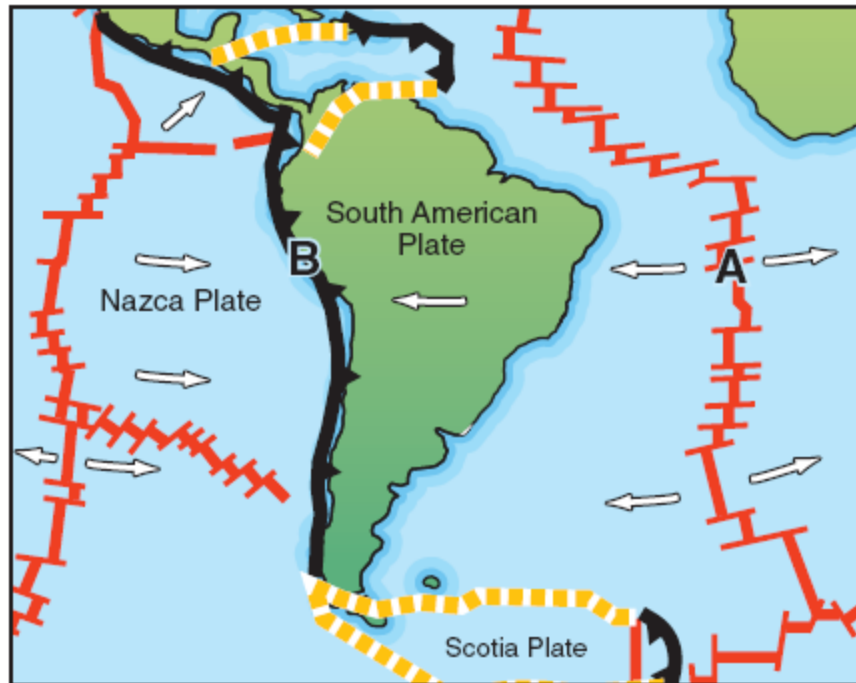
What Drives The Plates?

Understanding and Applying

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1a. What is happening between the two plates at point A?

1b. What happens at point B as the plates continue to push toward each other if they have:

- (i) Different densities?
- (ii) The same density?

